

Chem 226 / Dr. Rusay  
ORGANIC MOLECULES (III) WORKSHEET  
Acids and Bases

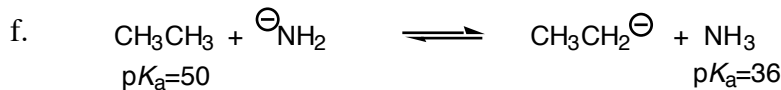
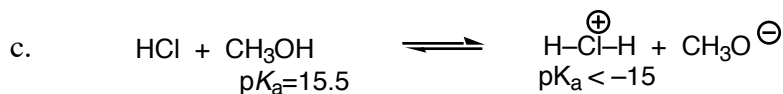
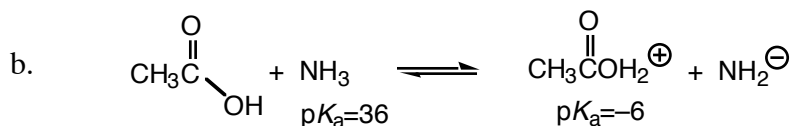
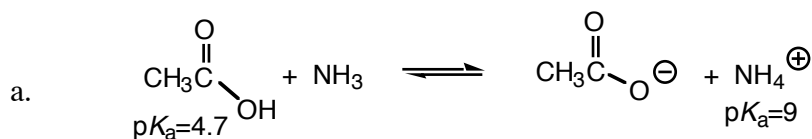
Turn-in answers neatly written on a separate piece of paper, including:

Name(s): \_\_\_\_\_

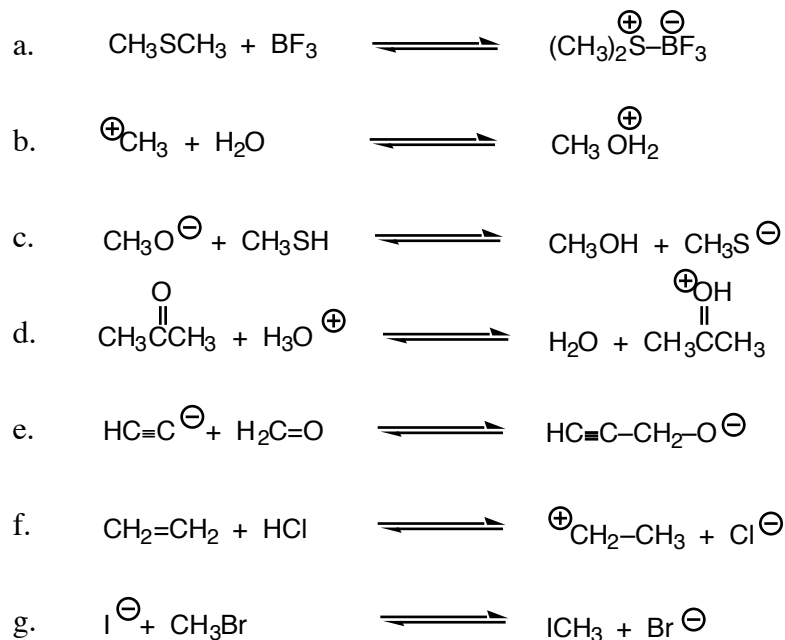
Section \_\_\_\_\_

(Collaboration is encouraged. Turn-in one sheet per group being sure to list all collaborators who contributed.)

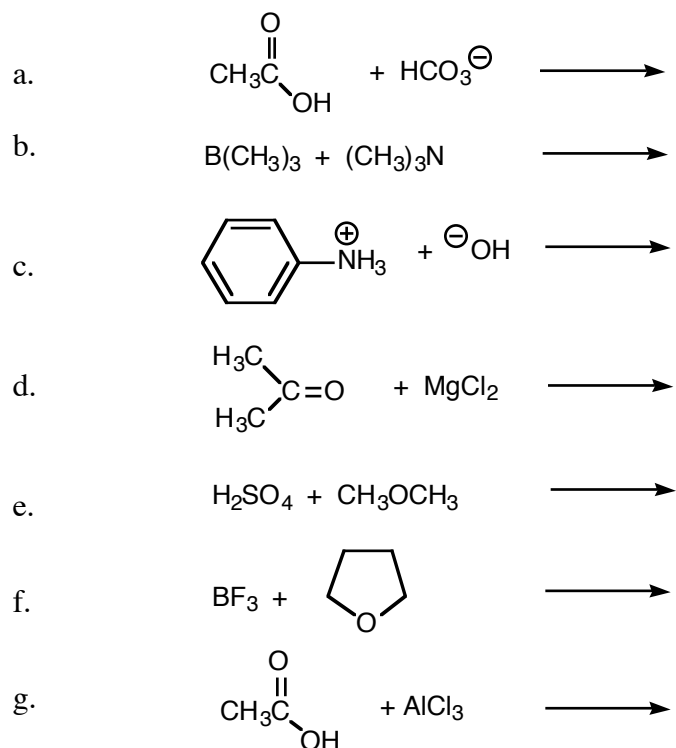
1. For each of the following reactions, designate the acids and the bases and use curved arrows to show the flow of electrons as the reaction proceeds from left to right. Circle the major species at equilibrium. Start by drawing complete Kekulé structures showing all bonding and nonbonding electron pairs at the reaction centers.



2. Draw complete Kekulé structures of reactants and products using lines for bonds, show nonbonding electron pairs, and indicate formal charges on atoms. Identify the acid and the base for each reaction. Use curved arrows to show the movement of electron pairs as the reactions proceed from left to right. Where appropriate identify and name the reactive species: carbocation, carbanion or free radical.



3. Predict the product(s) for the following reactions. The ideas that you used in the previous problems will be useful.



4. For each of the following pairs, one reaction proceeds to the specified products and the other does not. Predict which is which and *clearly explain your choice*. It will help to start with curved arrows to show which bonds are made and which bonds are broken in each reaction.

